

Massachusetts Division of Marine Fisheries



Gear Characteristics Survey

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Gear Characteristics Survey

Goal:

- Characterize fixed gear configurations used in coastal and near coastal waters by Massachusetts fishing vessels.



Survey Design

- **Identified fixed gear fisheries to be surveyed**
- **Identified current fishing vessels of the fixed gear fisheries**
- **Categorized vessels by reported amount of gear fished annually**
- **Established geographic areas**
- **Randomly selected survey participants**

Selected Fisheries

- **Lobster**
- **Sink Gillnet**
- **Hagfish**
- **Tub Trawl/Longline**
- **Fish Pot**

Massachusetts Division of Marine Fisheries

Fisheries Dependent Investigations

FIXED GEAR CHARACTERISTICS SURVEY

HAGFISH FISHERY



F/V _____

POT CHARACTERISTICS				ENTRANCE	
SHAPE	SIZE	DIMENSIONS		NUMBER	MOUTH OF FUNNEL
Unknown 0	Unknown 0	Length	Width	_____	_____ in
Rectangular 1	20gal 1	Top	_____ in	LOCATION	STYLE
Round/Oval 2	30gal 2	Bottom	_____ in	Unknown 0	Unknown 0
1/2 Round 3	40gal 3	Height	_____ in	Top 1	Closed end 1
Other 9	45gal 4	_____ and/or	_____ in	Side 2	Loose end 2
	50gal 5	Diameter	_____ in	End 3	Other 9
	55gal 6	Height	_____ in	Combination 8	
	60gal 7	_____ in	_____ in	Other 9	
SIDE CONSTRUCTION	65gal 8				
Unknown 0	Other 9				
Plastic 1		POT WEIGHT			
Other 9		_____ lbs			
BAIT					
METHOD			TYPE		
Unknown 0			Unknown 0		
String 1			Herring 1		
Bait Bag 2			Mackerel 2		
Stake 3			Fish Racks 3		
Loose 4			Red Fish 4		
Other 9			Skate 5		
			Other 9		
BRIDLE					
LENGTH		MATERIAL			
_____ in		Nylon 1	Rag rope 4		
		Poly 2	Combination 8		
		Neutral buoyant 3	Other 9		
ESCAPE VENT					
USED? NO 0 YES 1	LENGTH _____ in	LOCATION	SHAPE		
		Unknown 0	Unknown 0		
		Top 1	Rectangular 1		
		Side 2	Round/Oval 2		
		Bottom 3	Other 9		
NUMBER _____	HEIGHT _____ in	Combination 8			
	or DIAMETER _____ in	Other 9			
GROUND LINE					
TRAWLS? NO 0 YES 1	MATERIAL		GANGION		
	Nylon 1		LENGTH	ATTACH POT	
	Poly 2		_____ ft	knot 1	
NUMBER POTS/TRAWL _____	Neutral buoyant 3			Splice 2	
	Rag rope 4			Clip 3	
	Combination 8			Other 9	
	Other 9				
DISTANCE BETWEEN POTS _____ ft	float or sink	MATERIAL			
		Nylon 1			
SIZE LINE _____ mm or in (circle one)		Poly 2			
		Neutral buoyant 3			
SINGLES? NO 0 YES 1	RE-ATTACHMENT METHOD	Rag rope 4			
	Knot 1	Combination 8			
	Splice 2	Other 9			
	Other 9				
NUMBER _____		SIZE LINE			
		_____ mm or in (circle one)			
How often do change ground line? _____ /week					
How often are you set over in a week? _____ /week					

END LINE

HIGHFLYER? NO 0 YES 1	MATERIAL	SIZE																																																																	
RADAR REFLECTOR? NO 0 YES 1	Nylon 1																																																																		
POLYBALL? NO 0 YES 1	Poly 2	_____ mm or in (circle one)																																																																	
SHAPE	Neutral buoyant 3																																																																		
SIZE	Rag rope 4																																																																		
Round 1 _____ in	Combination 8																																																																		
Oval 2 _____ in	Other 9																																																																		
Other 9 _____ in																																																																			
	WEAK LINK																																																																		
	USED? NO 0 YES 1																																																																		
	float or sink	STYLE																																																																	
BUOY? NO 0 YES 1		Hoggrings 1																																																																	
SIZE	NUMBER	Thin line 2																																																																	
5inx11in 1		Swivel 3																																																																	
6inx14in 2		Slot Link 4																																																																	
7inx15in 3		Modern Mold Slip Link 5																																																																	
9inx11in 4		Other 9																																																																	
Other 9 _____ in																																																																			
	RE-ATTACHMENT METHOD																																																																		
	Knot 1																																																																		
	Splice 2																																																																		
	Other 9																																																																		
ATTACH TO BUOY?		Est breaking strength																																																																	
Knot 1		_____ lbs																																																																	
Splice 2																																																																			
Other 9																																																																			
SWIVEL NO 0 YES 1		How often do change end line? _____																																																																	
		How often are you set over in a week? _____ /week																																																																	
If "yes" where? _____																																																																			
<table border="1"> <thead> <tr> <th>TRIPS / MONTH</th> <th>Jan</th> <th>Feb</th> <th>March</th> <th>April</th> <th>May</th> <th>June</th> <th>July</th> <th>Aug</th> <th>Sept</th> <th>Oct</th> <th>Nov</th> <th>Dec</th> </tr> </thead> <tbody> <tr> <td>AVG. SOAK</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>AVG. DEPTH</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>AVG. # POTS FISHED/TRIP</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>GENERAL LOCATION</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table>			TRIPS / MONTH	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	AVG. SOAK													AVG. DEPTH													AVG. # POTS FISHED/TRIP													GENERAL LOCATION												
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Gear Survey Details

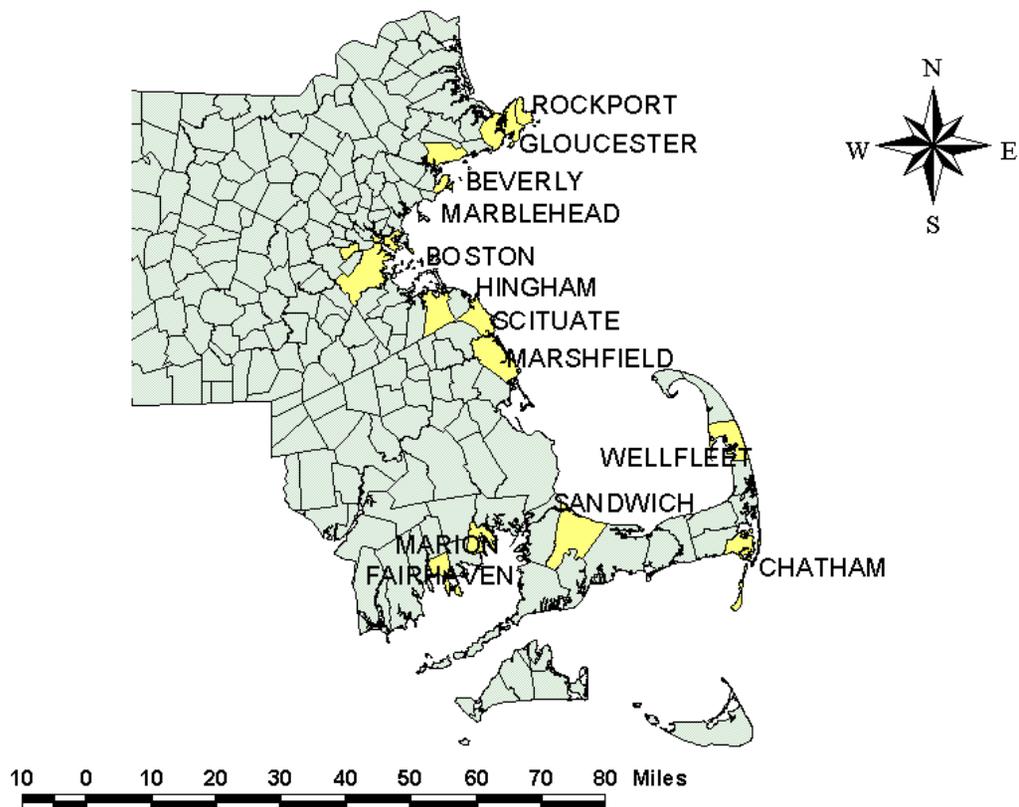
- Surveyed 64 fishermen
- Interviews conducted by DMF biologists and sea samplers
- Interviews via telephone, dockside, and at sea
- Lots of variability

LOBSTER FISHERY

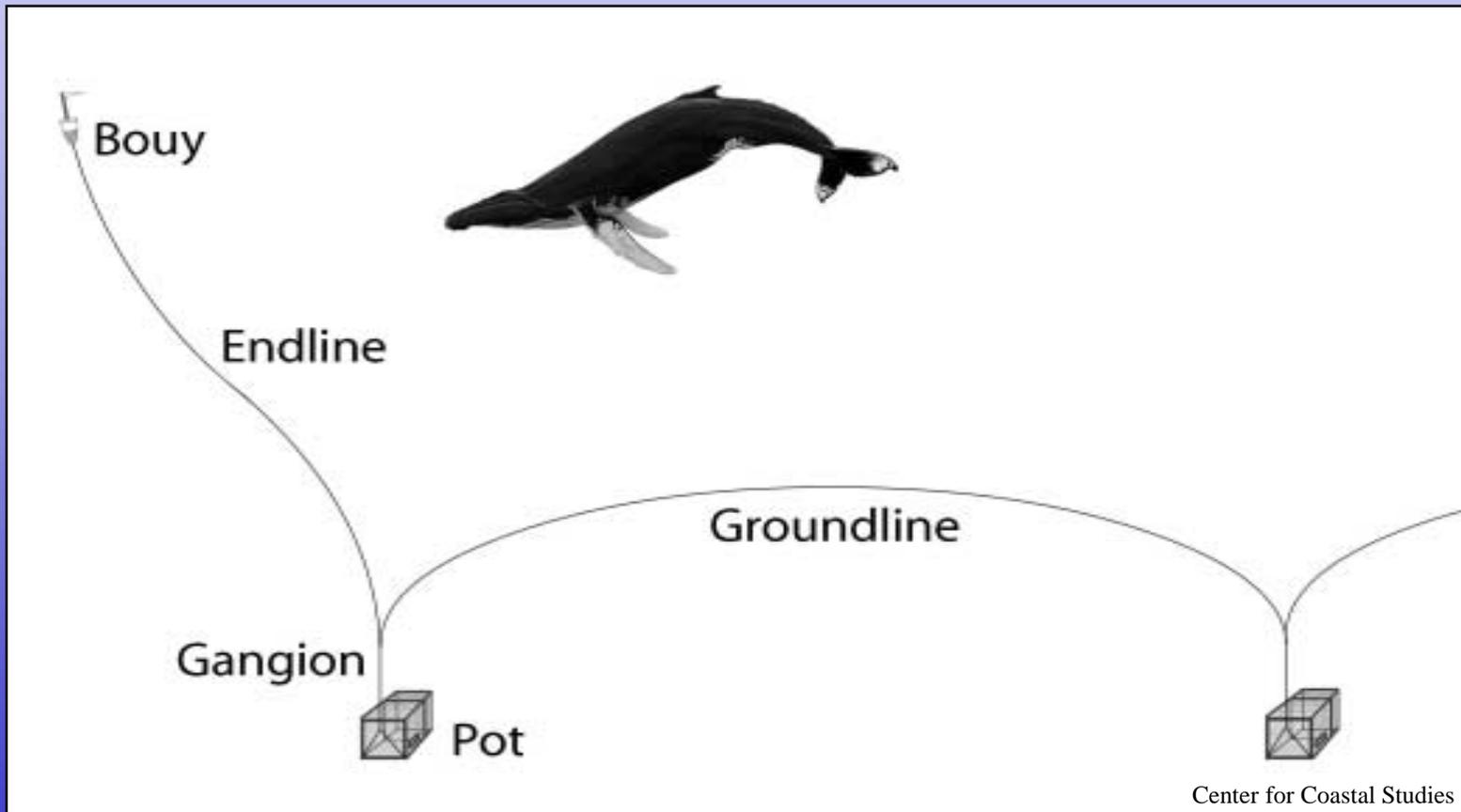
- **25 interviews**
- **Established 3 geographic areas**
 - **North Shore**
 - **South Shore/Cape Cod Bay**
 - **Outer Cape/ Southern Ma. and Islands**

Lobster Fishery - Ports Surveyed

Lobster Ports



Lobster Trawl

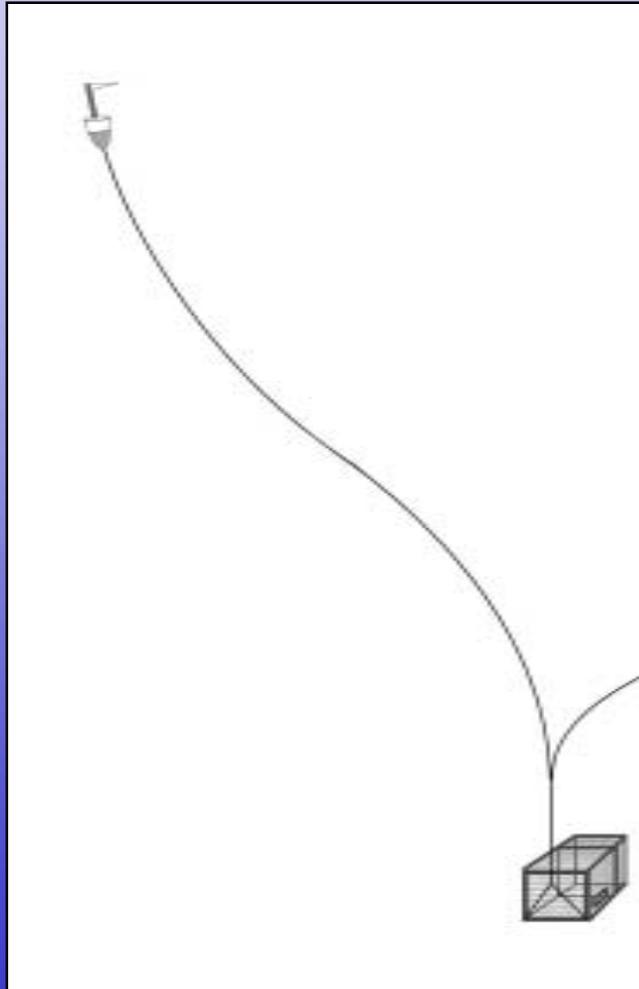


Lobster Buoys & Highfliers



- Use Highflier?
 - No: 55%
- Use Polyball?
 - No: 79%
 - 30": 83%
- Use a Bouy?
 - Yes: 60%
 - 7"x15"
- Attach to Buoy?
 - Knot: 80%

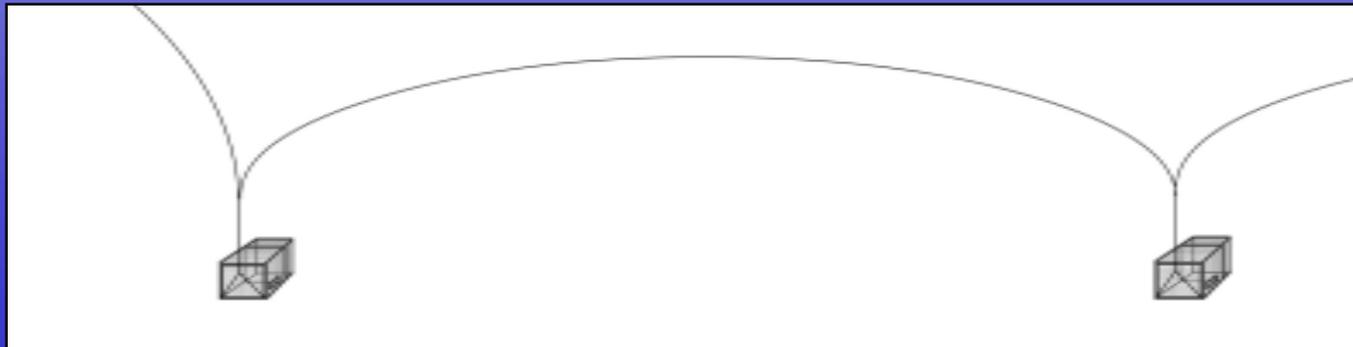
Lobster Endline Material:



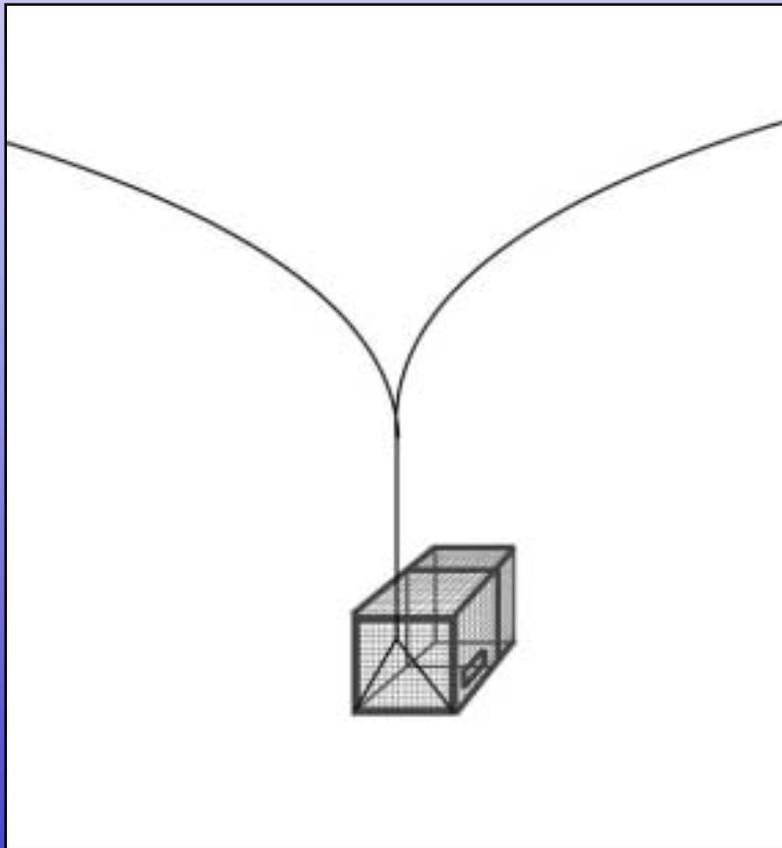
- 42% use combination of rope materials
 - 1/2 nylon and 1/2 poly: 28%
- Most common:
 - 5/16: 39%
- Weaklink:
 - Yes: 46%
 - 5 hogring
 - 500pound breaking strength
 - whales and ships

Lobster Groundline

- 92% fish trawls
 - 10 pot trawls
 - 48% have 81-110 feet between pots
- 50% fished 3/8 line
- Reattach w/ knot
 - Splice line at end of year

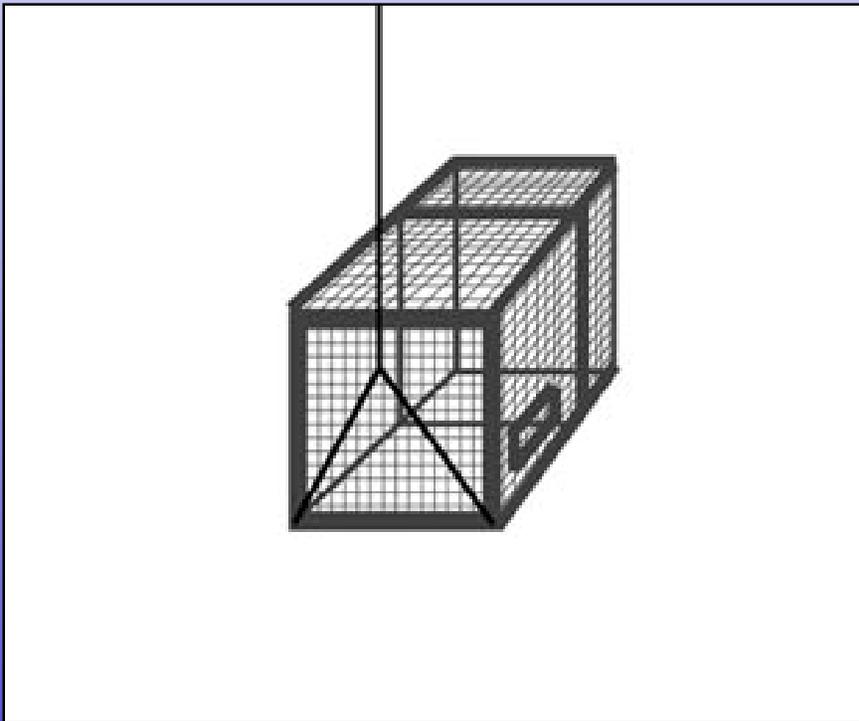


Lobster Gangion & Bridle



- 84% use Gangion
 - 38% at 2-3 feet long
 - 57% use nylon
 - 50% use 3/8" size rope
- 48% use 12" long bridle
 - 50% use 3/8" size rope
 - 47% use poly

Lobster Pot Characteristics

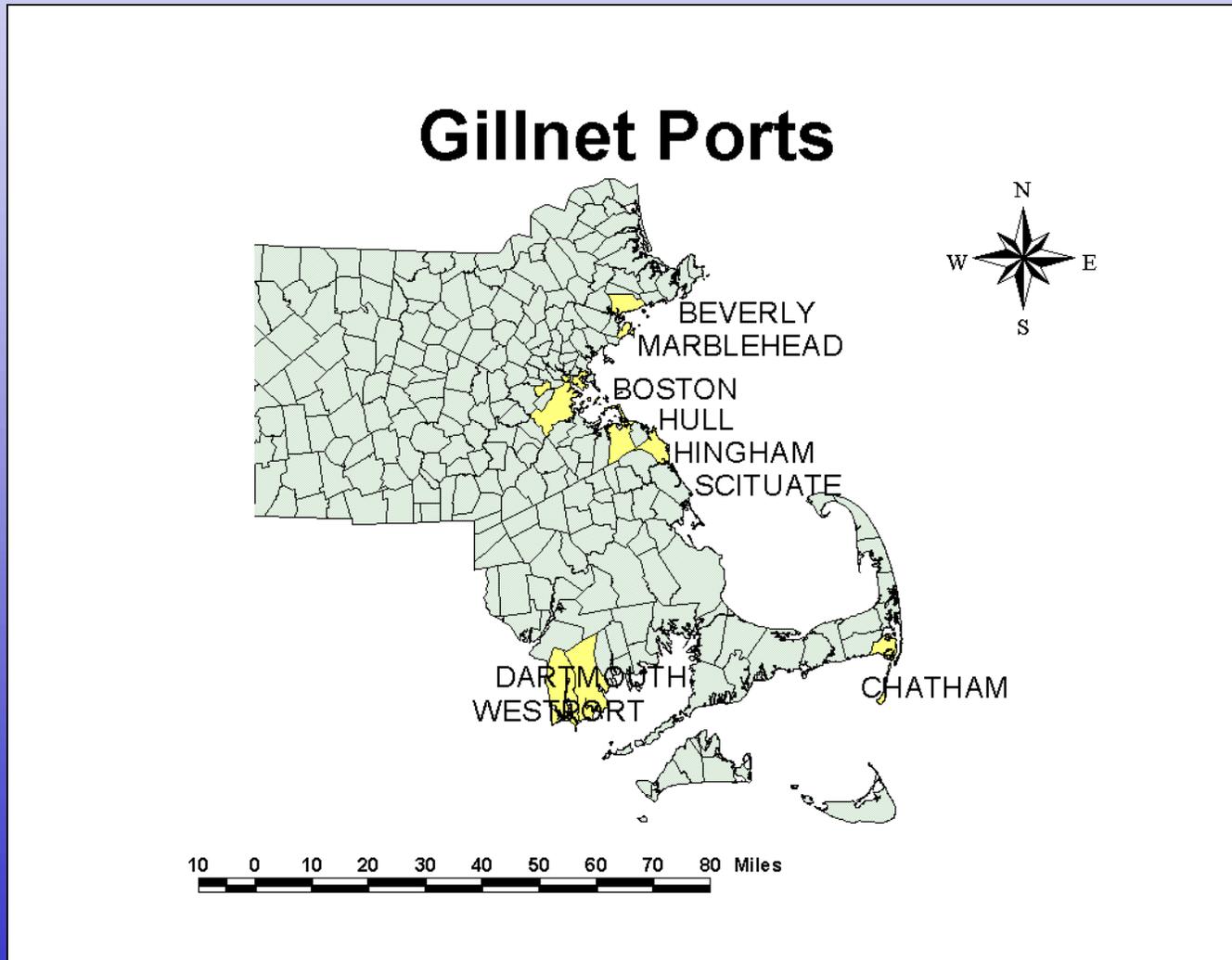


- Shape
 - 92% rectangular
- Side Construction
 - 87% coated wire
- Common Size:
 - 36"x21"
 - 13.5"

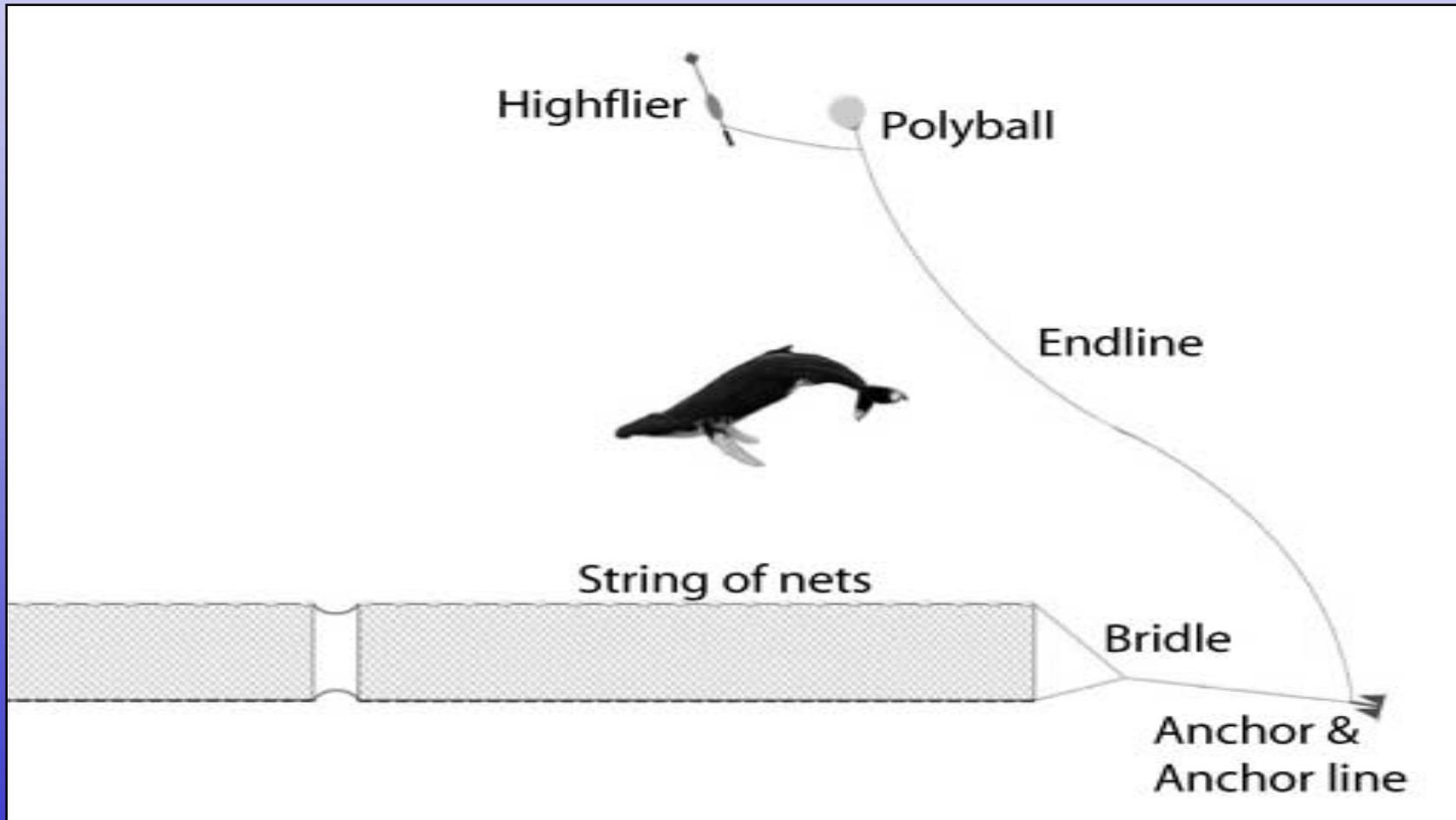
Sink Gillnet Fishery

- **15 boats interviewed**
- **Highly regulated fishery**
- **Many standard characteristics**
- **inshore vs. “near-shore”**

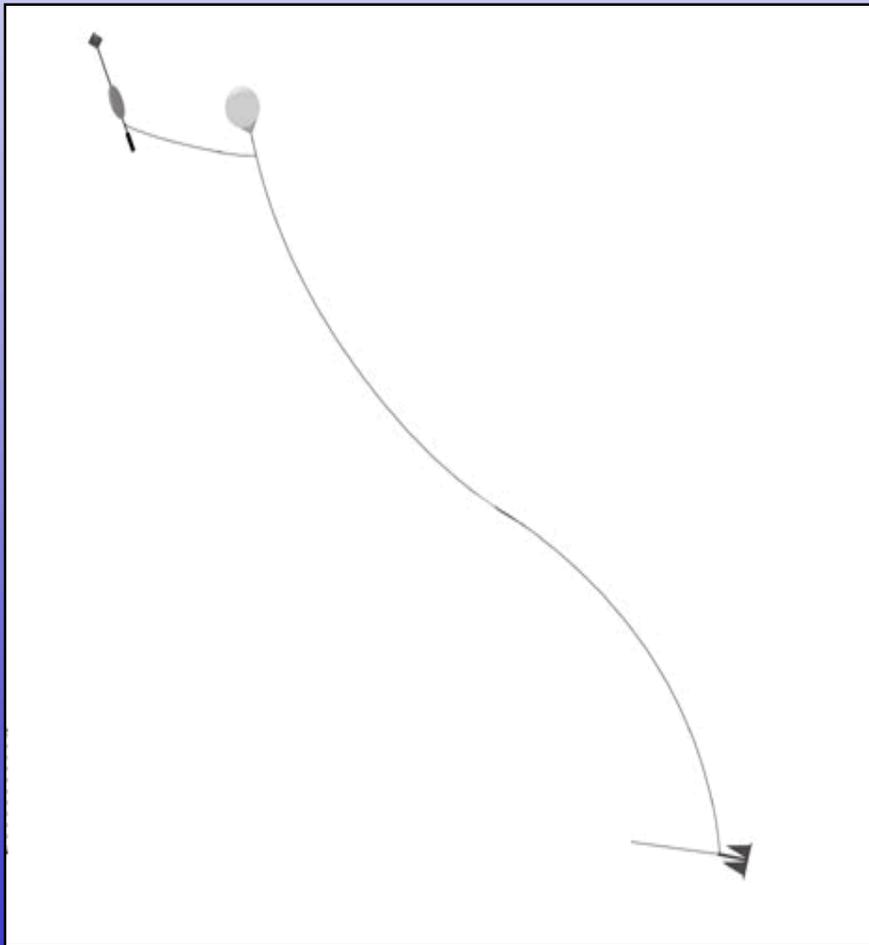
Gillnet Fishery - Ports Surveyed



Gillnet Gear

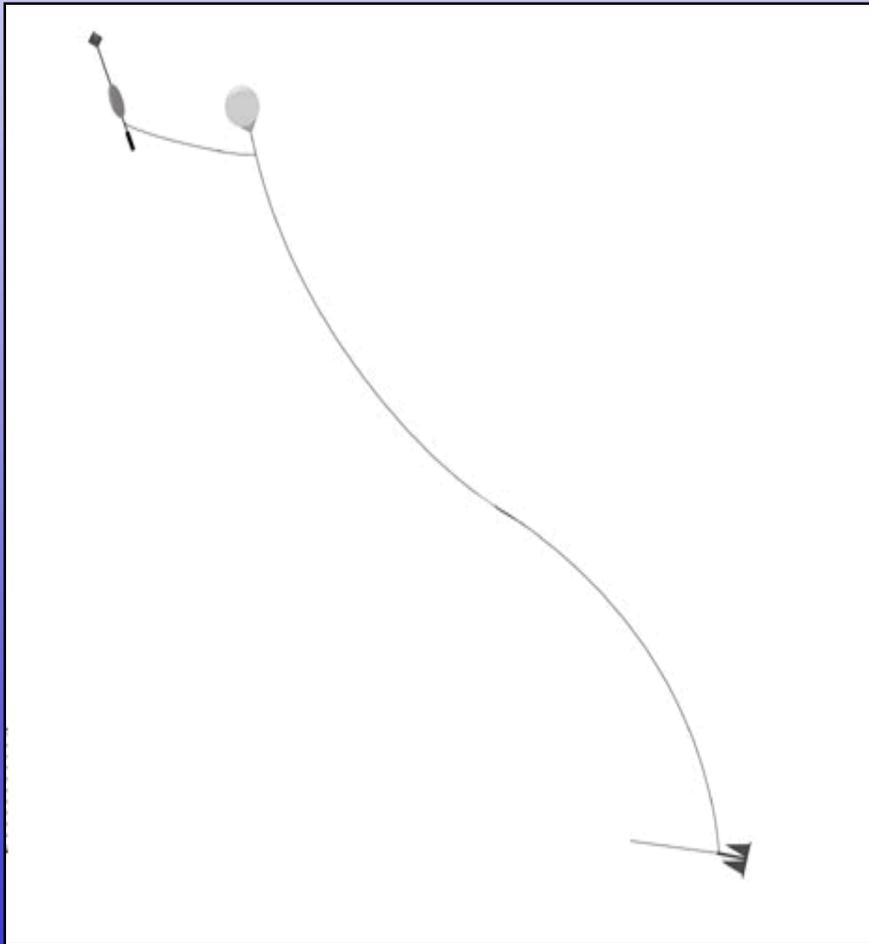


Gillnet Buoy and Highfliers



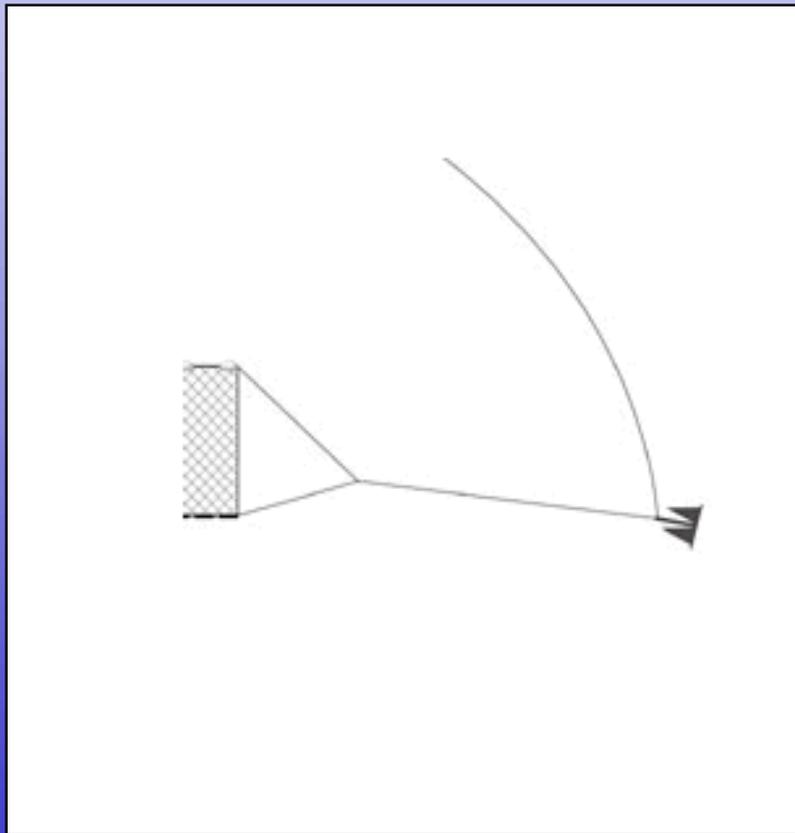
- Highflier:
 - yes: 100%
- Distance buoy to Highflier:
 - 3' to 24'
 - 12' most common
- Buoy or Polyball:
 - 73% Buoy
 - 7"x15"
 - 47% Polyball
 - 40"

Gillnet Endlines



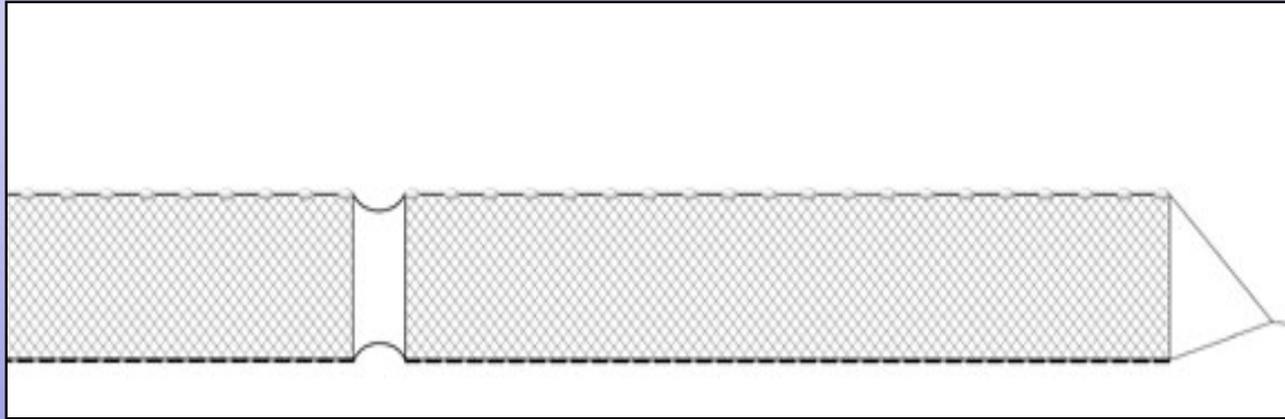
- Nylon/Poly comb:
 - yes: 44%
 - 3/8 line most common
 - 1/3 nylon 1/3 poly
- Spliced nylon/poly comb.
- 18% poly
- No loats or toggles

Gillnet Anchor to Bridle



- Anchor style:
 - Dansforth: 33%
 - RR rail: 40%
- Anchor line:
 - 3-6 fath.
 - as long as 20 fath.
- Anchor line material
 - 3/8 poly: 38%

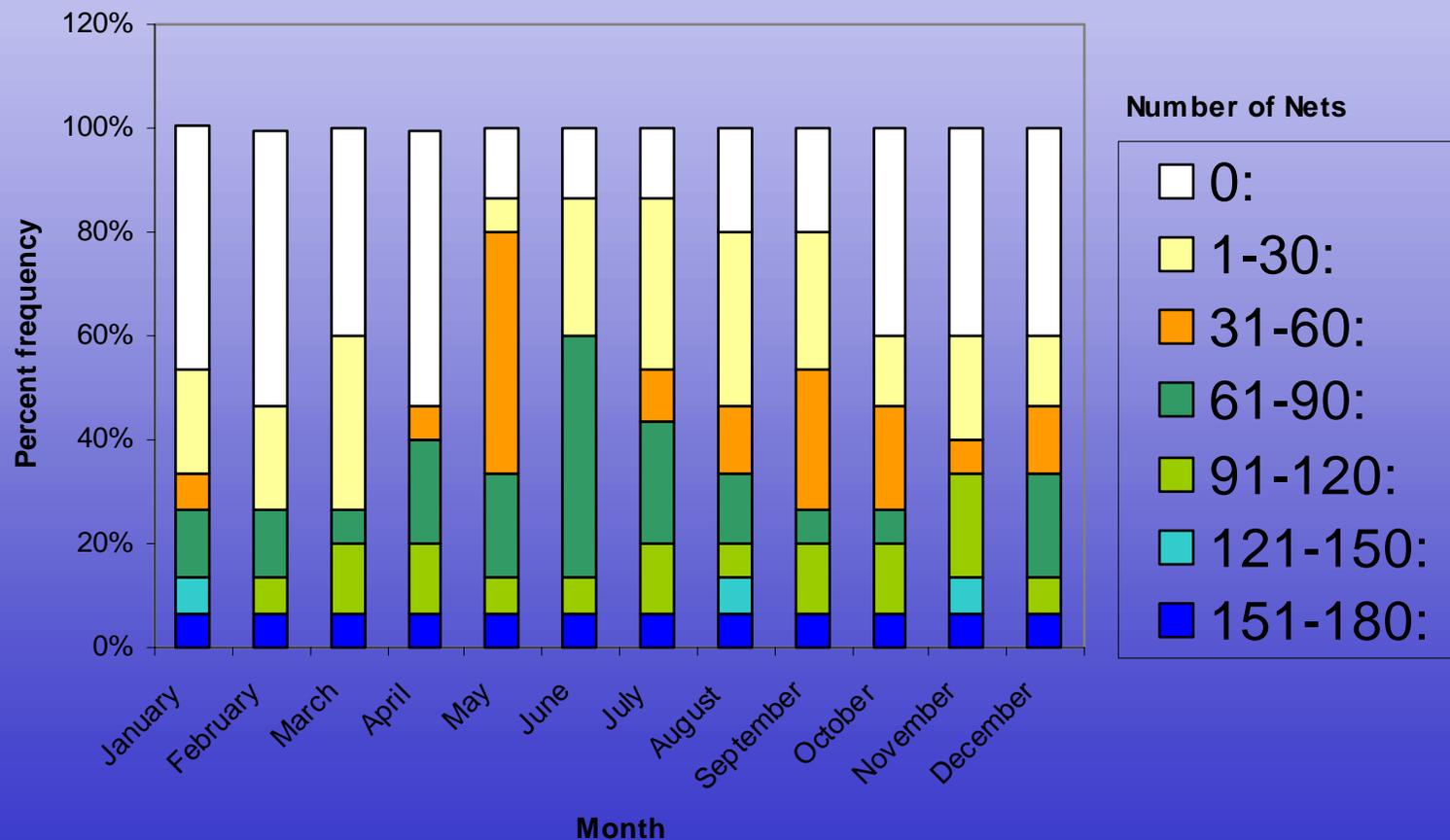
Gillnet Specifications



- Length of panel: 300'
 - 100%
- Floatline:
 - 5/16" to 1/2"
 - 5/16 poly with floats (stand up)
- Bridles:
 - tied together w/ double becket knot
 - space in between nets

Gillnet Effort

Percent frequency of numbers of nets fished by fishermen per month



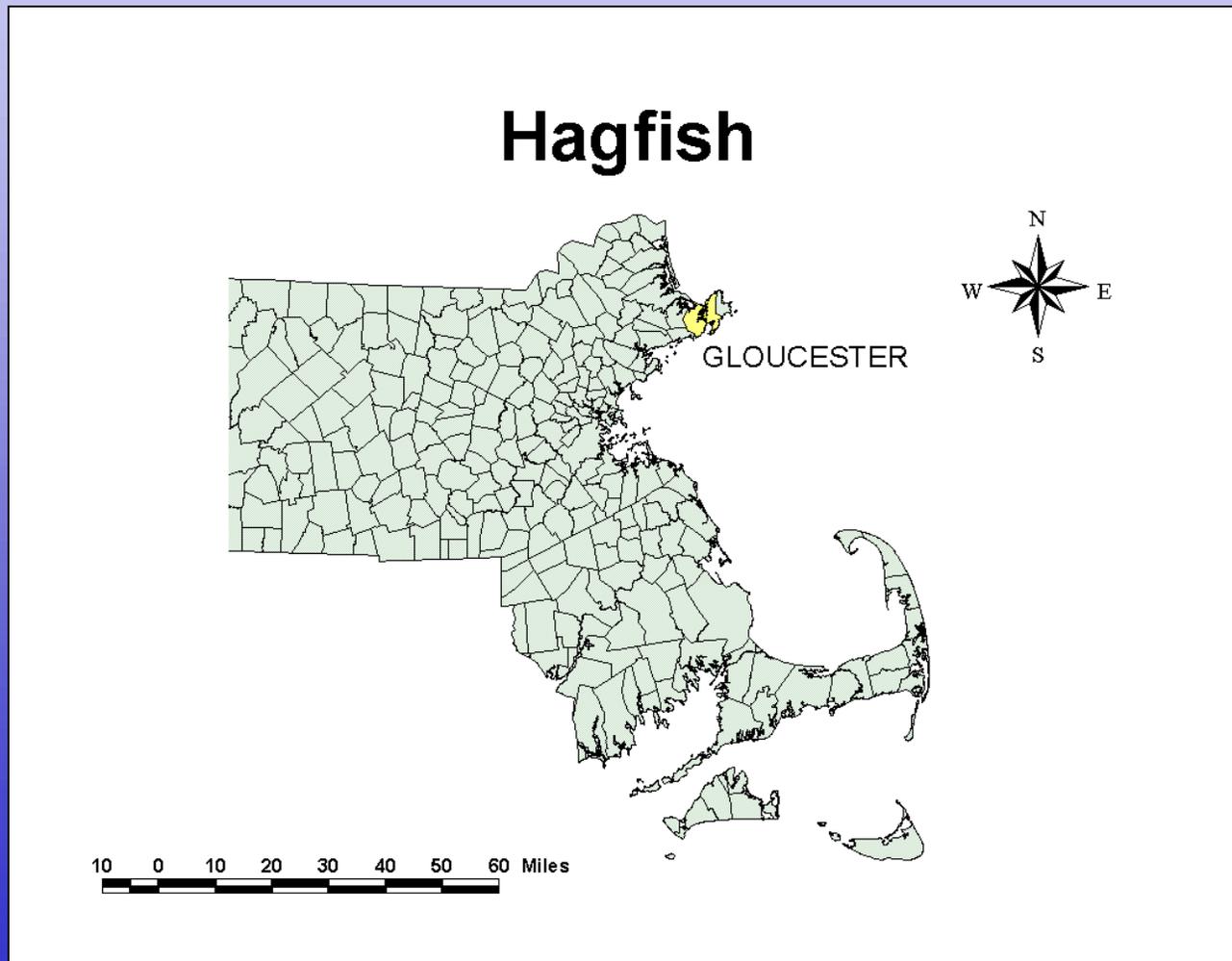
Weaklinks and Marine **Mammal Deterrent Devices**

- Pingers mandatory during fall, winter and early spring
- Spaces in panels as places for mammals to pass through
- Weaklinks:
 - Yes: 73%
 - Break Away Swivel: 47%

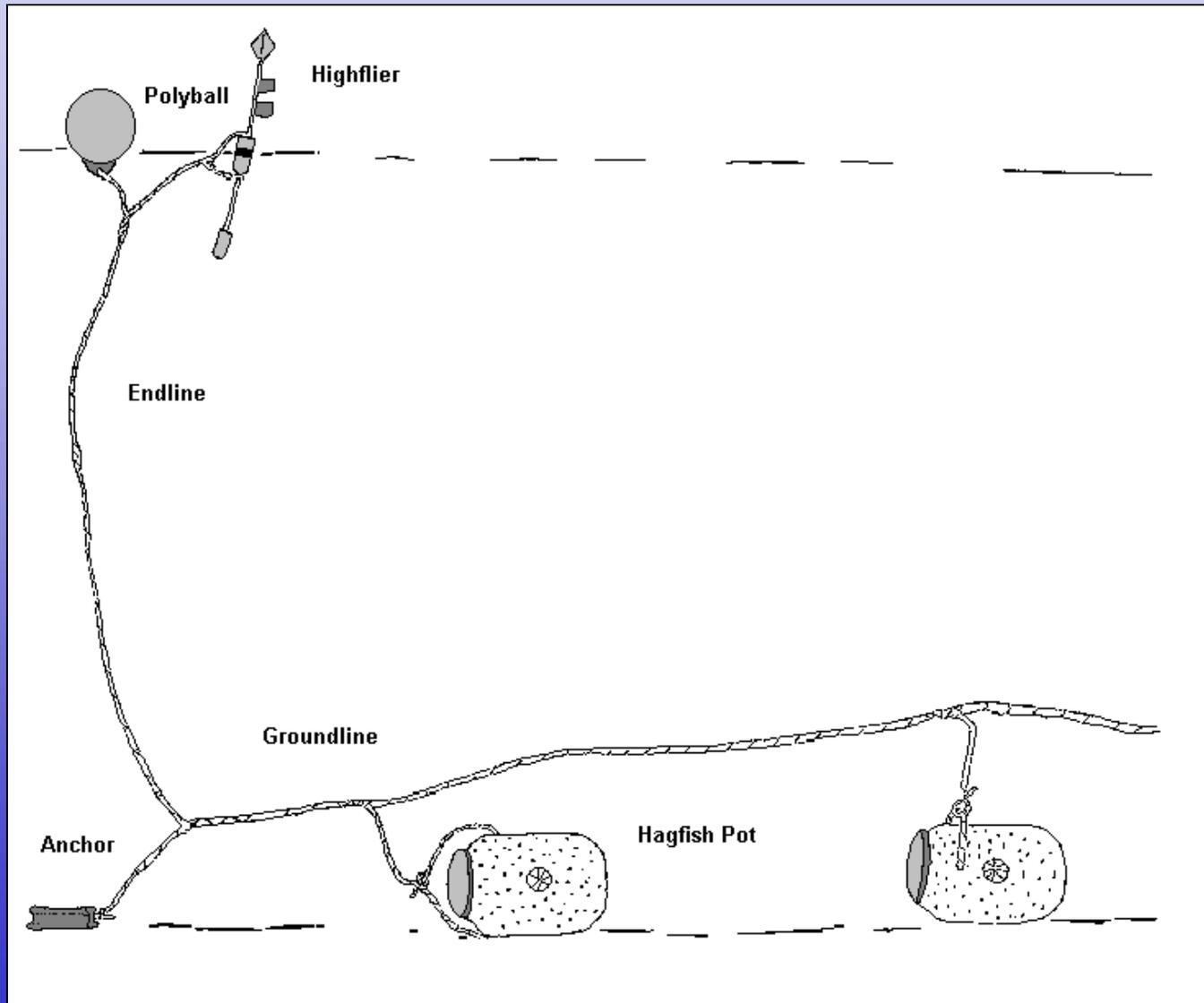
Hagfish Fishery

- **New Fishery 8+/- years old**
- **Processed in South Korea**
- **Skin and meat**
- **Meat now driving the market**
- **In order to handle hagfish, need freezing and cold storage**
- **Gloucester, Ma. hub of fishery**
- **Smaller boats fish in summer, larger boats fish year-round**
- **DMF interviewed 8 boats**

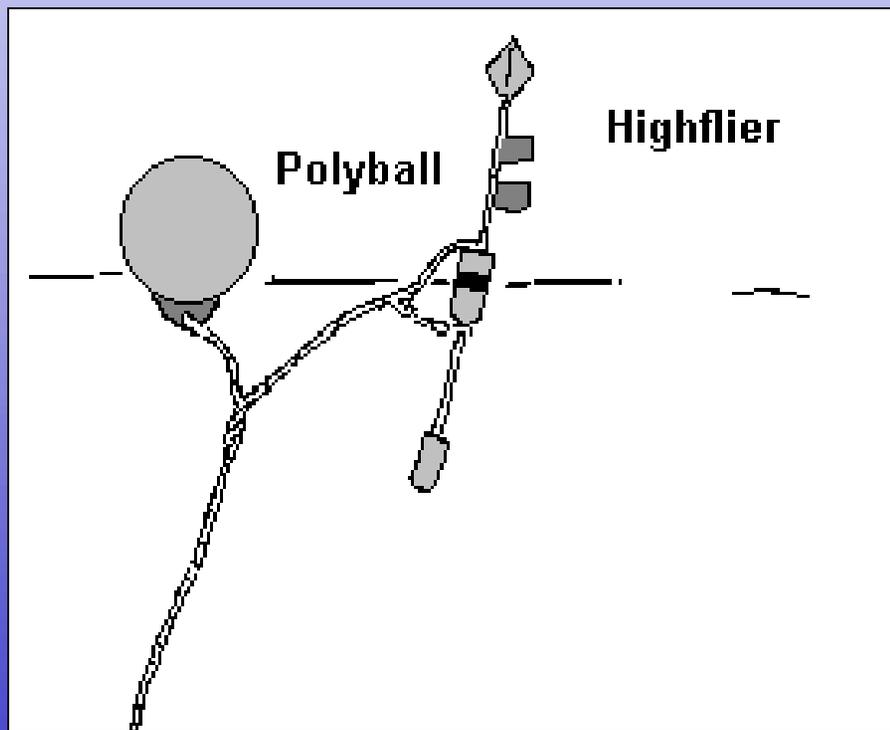
Hagfish Fishery - Ports Surveyed



Hagfish Gear

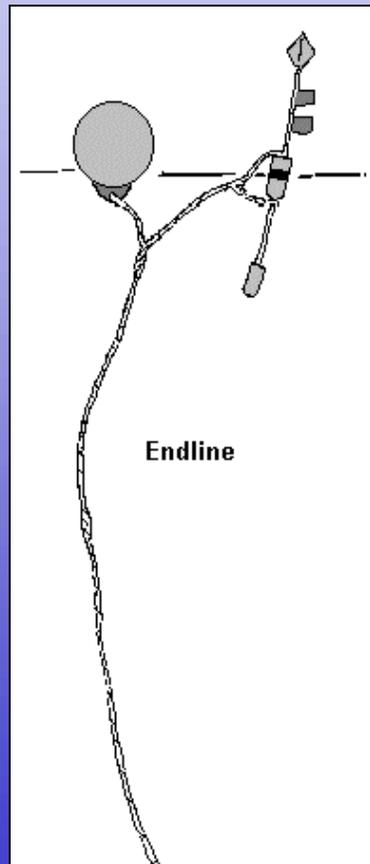


Buoys and Highfliers



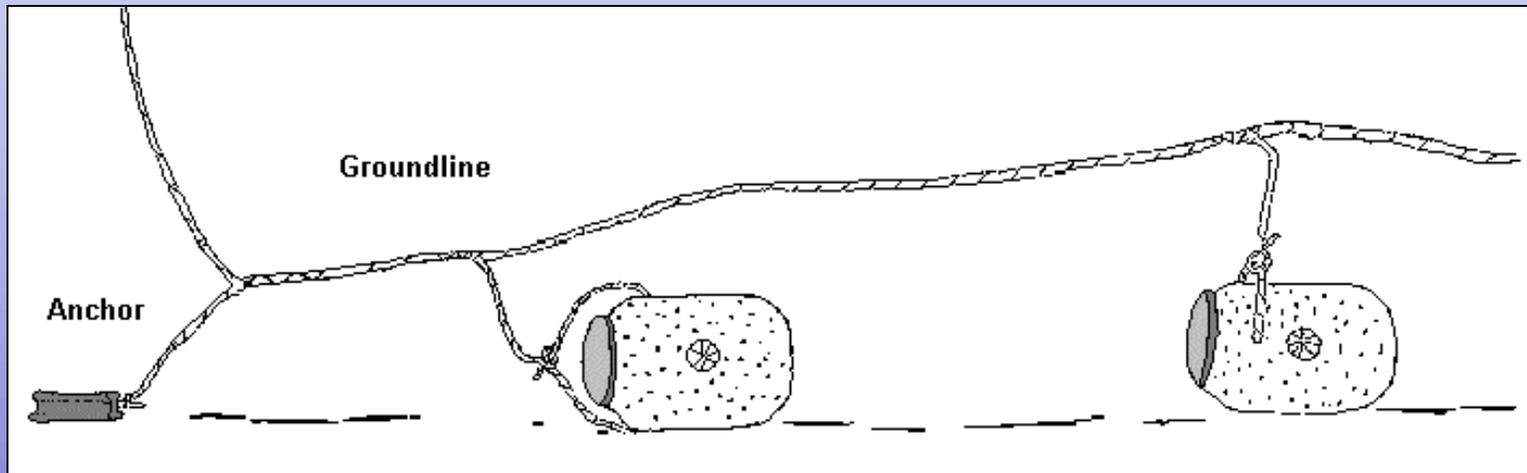
- Highflier/buoy comb. most common
- Buoy size
 - 9"x11"
- Polyball size
 - LD3 30"x14"
- Tag end to highflier
 - continuation on endline
 - distance highflier to buoy: 40' avg

Endlines



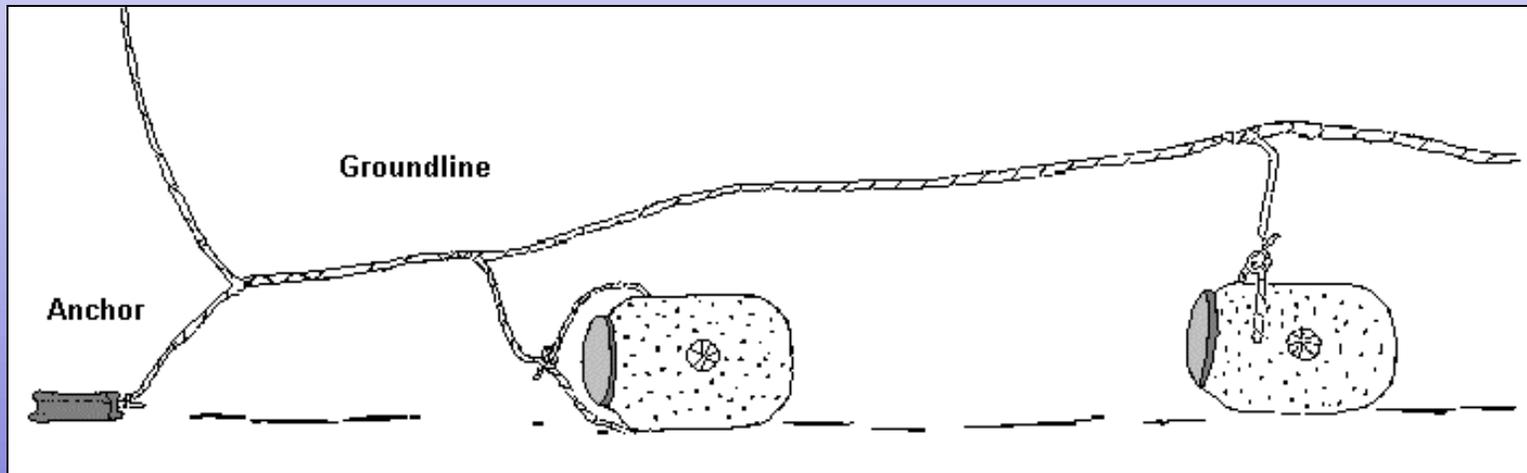
- Most boats used a comb. endline
 - 1/2" 1/3 nylon x 2/3 poly
- Diameter range
 - 3/8" to 5/8"
- Weaklinks used?
 - 50% of the time
 - break away swivel most common
- Re-attachment method?
 - Spliced: 56%

Anchors



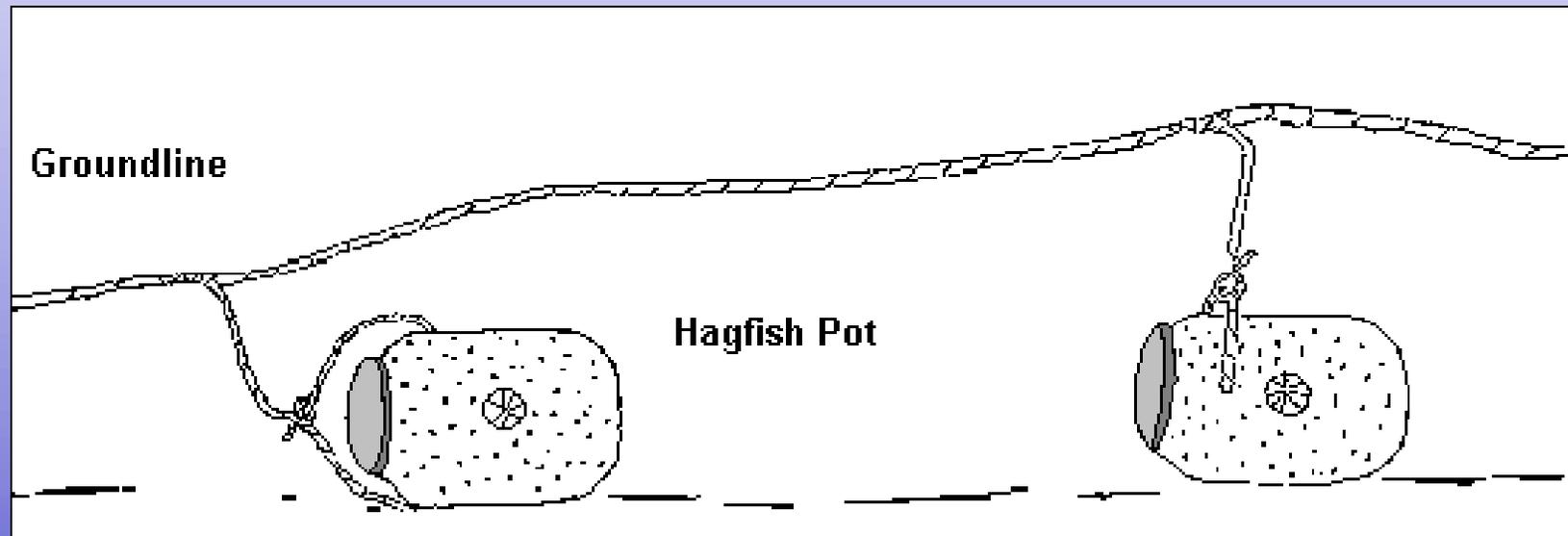
- Anchor weights
 - Inshore concrete block / offshore RR track 5- 200lb
- Anchor line averaged 12' inshore / offshore 30'
 - $\frac{3}{8}$ to $\frac{5}{8}$ line attached w/a splice or knot
- 2 -3 anchors used per trawl

Groundline



- Length of trawl
 - 1800' inshore / 7200' offshore
- Material used inshore
 - 7/16" or 1/2" nylon
- Material used offshore
 - 3/8 to 5/8 nylon and poly
- Pots fished per trip
 - 80 to 144 pots
- Inshore 10 pot trawls were the most

Pot Characteristics

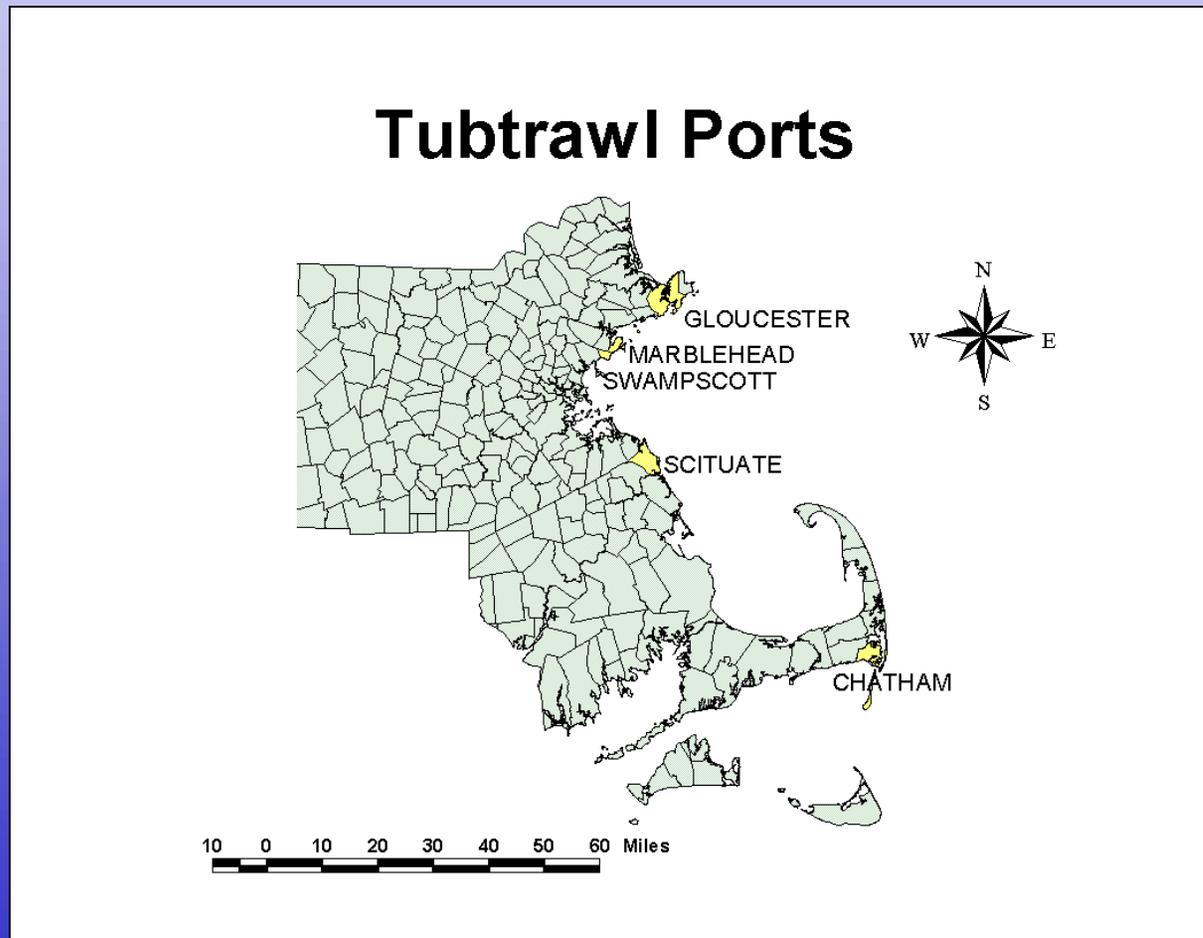


- Plastic barrels w/screw top
 - 5gal to 55gal / 45gal pickle barrel
- Average weight
 - 45 lbs use bricks, metal
- Baited loose / Herring most common
- Gangion
 - 3/8" to 5/8", avg 1 fm long
- Bridle
 - attached w/ double becket or becket w/tuck

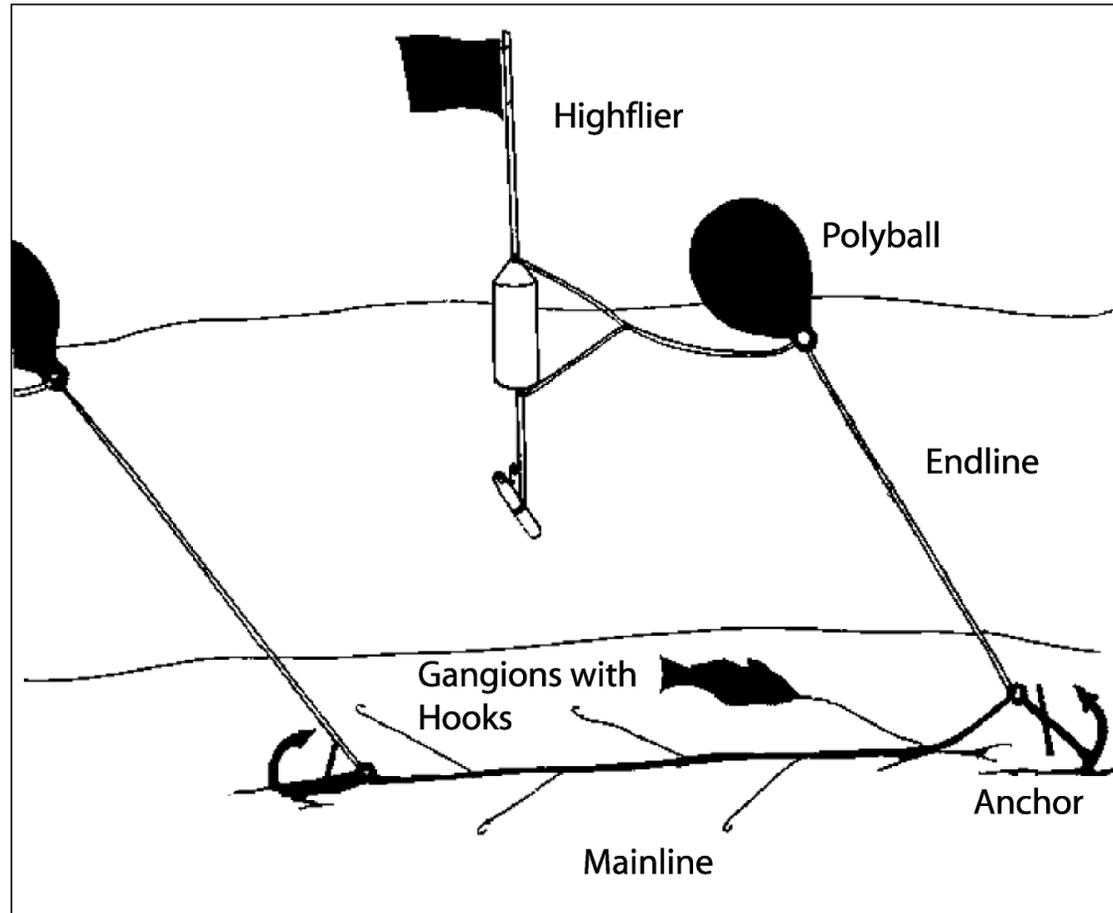
Tub Trawl

- One of the earliest methods used to target ground fish
- Used to target Spiny Dogfish, Cod, Pollock, Haddock
- Less financially viable, because of limits of fish allowed to land
 - Multispecies and Spiny Dogfish plans
 - Except south of 42 deg lat
- Interviewed 12 fishermen for survey

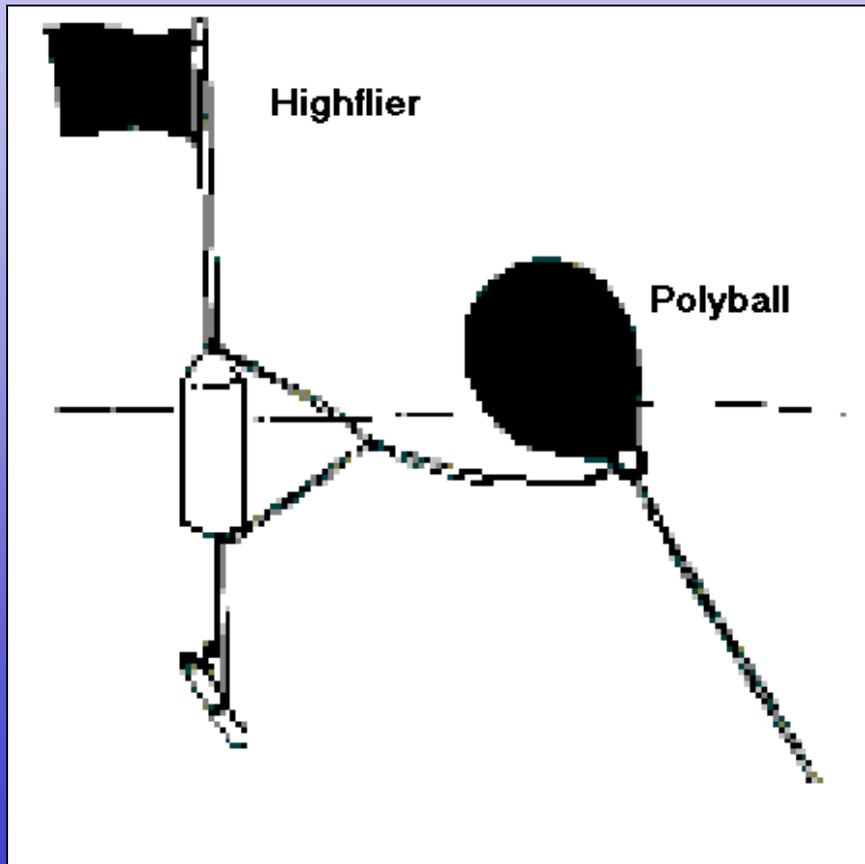
Tubtrawl Fishery - Ports Surveyed



Tubtrawl Gear

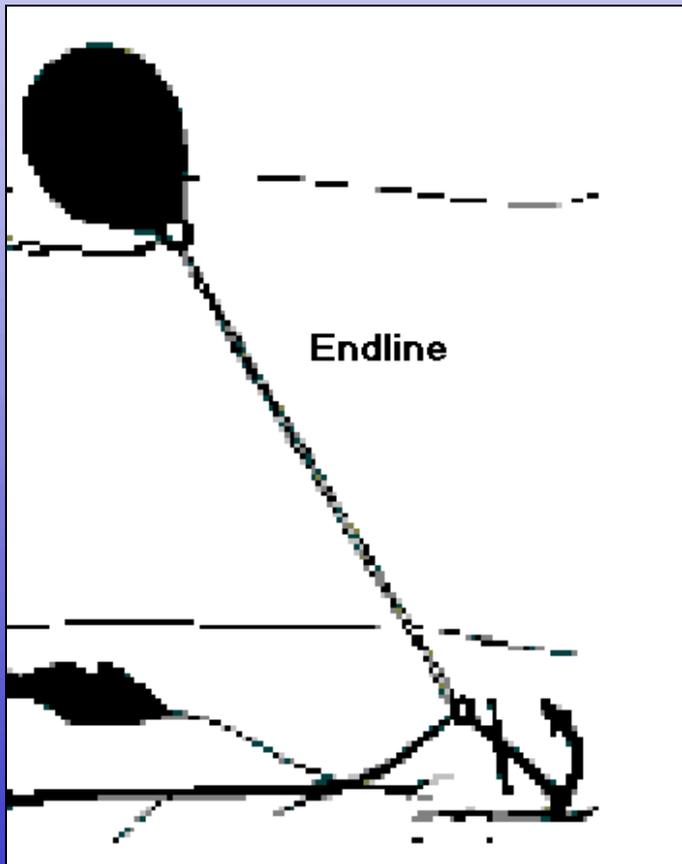


Buoys and Polyballs



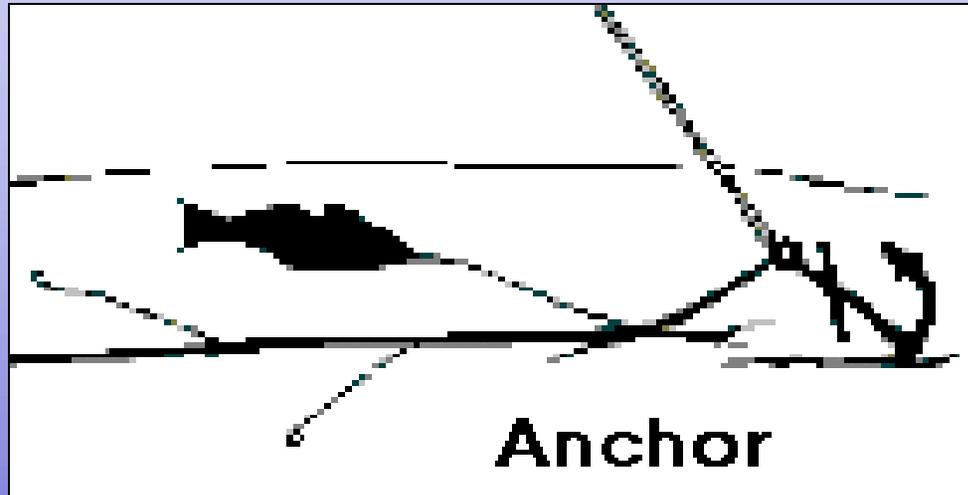
- Buoy?
 - Yes: 42%
 - 7" x 15" most common
- Polyball?
 - Yes: 58%
 - 40" most common
- Highflier?
 - Yes: 67%

Endlines



- Continuation of mainline
 - Parachute cord
 - 5/23, 8/32, 9/32
 - 3/8 1/3 nylon 2/3 poly
- Buoys and highfliers
 - clipped on w/ longline clip
- No weaklinks
- Breaking strength
 - 965lb - 1400lb

Anchors



- Used?

- Yes: 100%

- Number used?

- 2: 92%

- Window weights most common

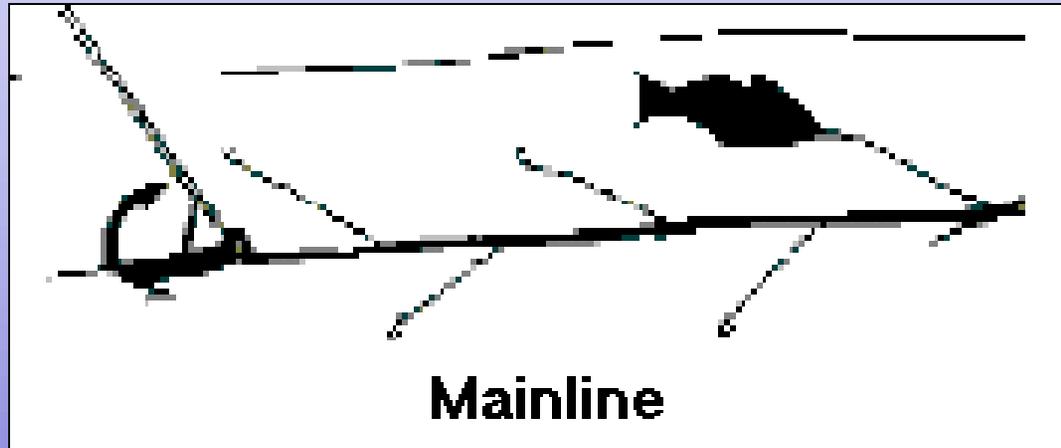
- Weight?

- 10lbs - 50lbs

- Bigger anchor for bigger tides

- Attached w/ longline clips

Mainline



- Material used?
 - 75% Parachute cord
- length of one tub?
 - Avg: 1500'
- breaking strength
 - 1010 - 1400
- Length of string
 - 1 - 5 tubs

Gangions and Hooks

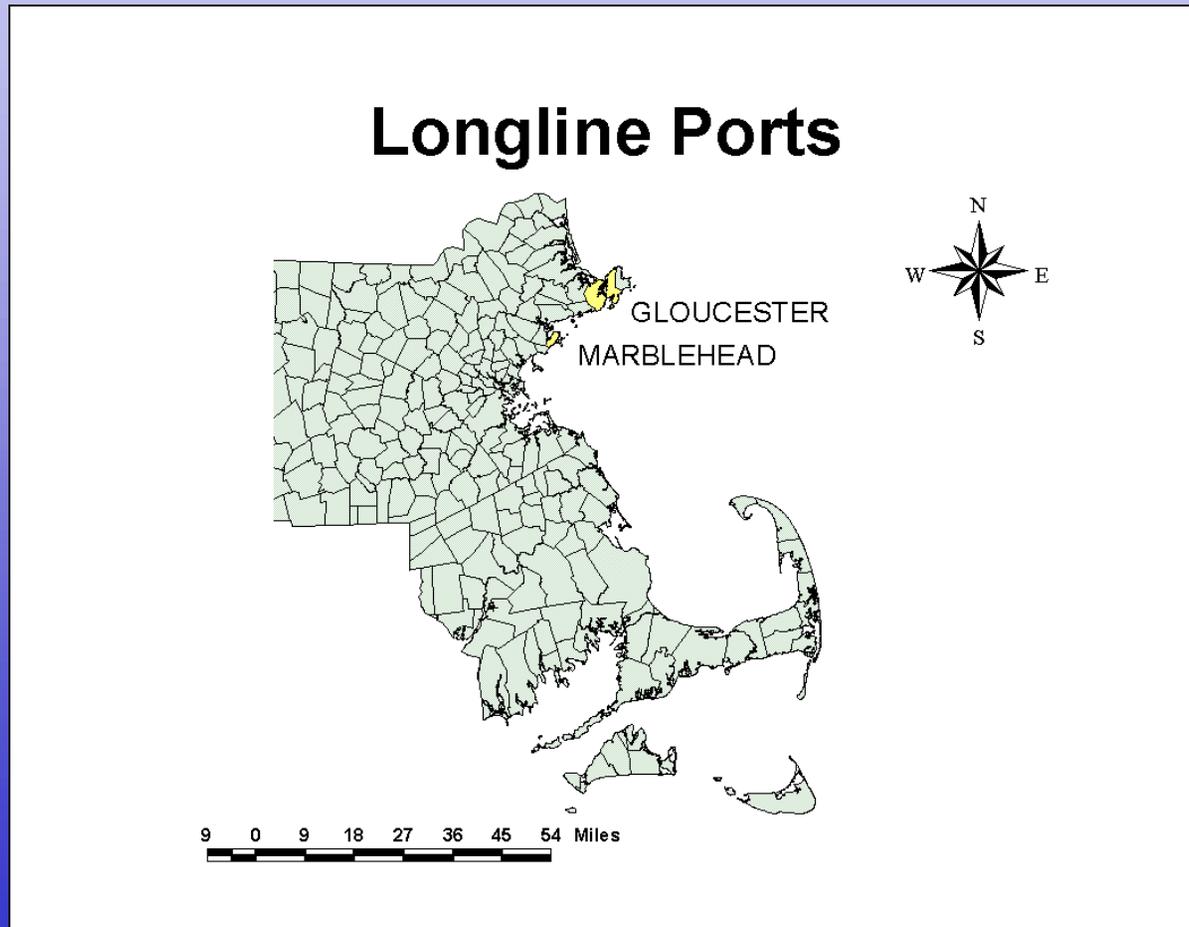


- Number of Gangions:
 - 100 - 500
 - 250 avg
- Diameter:
 - 550 thread 200 lb break
- Length:
 - 1' to 2'
- Distance between gangions
 - 3' - 9'
 - Most common 1 fathom
- Hooks
 - Mustad: 83%
 - circle: 71%
 - size:12/0

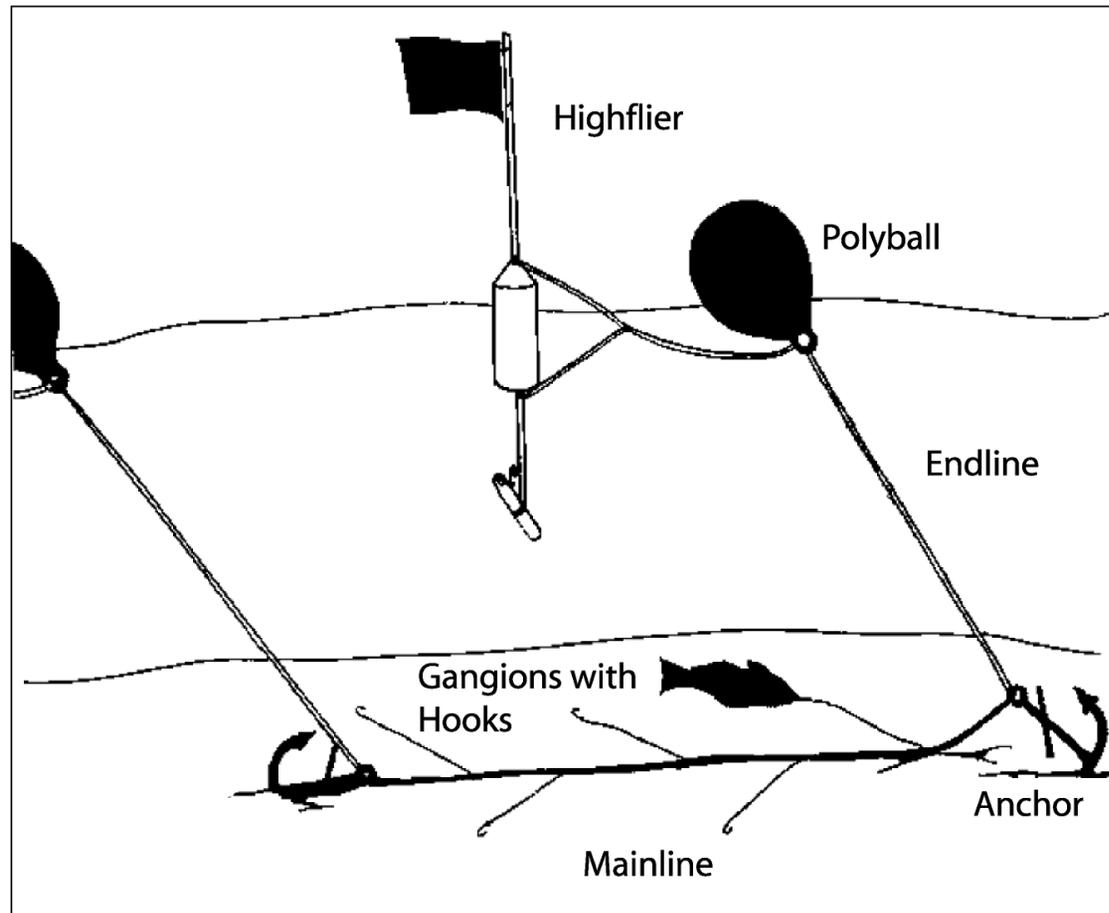
Longline

- Very similar to Tubtrawl
- Target same species, fish same bottom
- Due to current Multispecies and Spiny Dogfish regulations, less financially viable
- Surveyed 4 fishermen

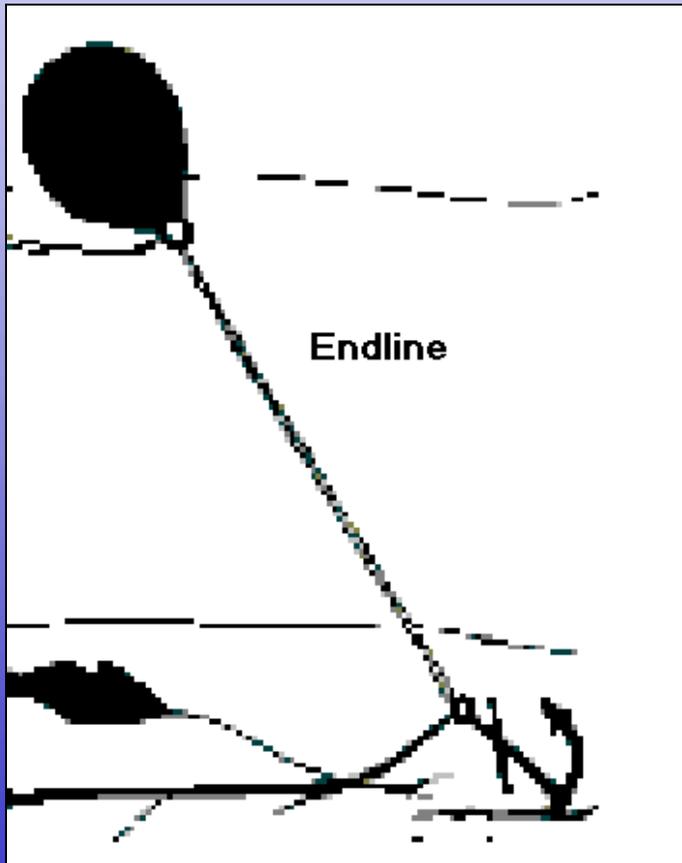
Longline Fishery - Ports Surveyed



Longline Gear

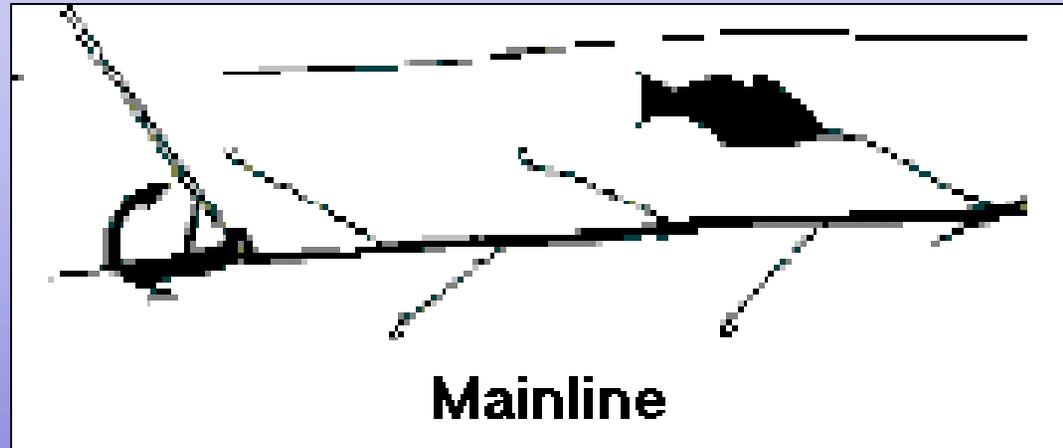


Endlines



- Material same as mainline
 - 75% use parachute cord
 - 7/32" to 8/32"
- Breaking strength
 - Not < 1100 lbs

Mainline and Anchor



- 1 to 6 nautical miles long
- Parachute cord
- Anchors
 - Window weights snapped on periodically
 - 50% trawl anchor on ends

Gangions and Hooks



- Material:
 - Monofilament: 100%
 - Length:
 - 2'
 - Dist. Between gangions:
 - 5' - 30'
- Hooks:
 - Mustad 100%
 - Circle 100%
 - Size:
 - 12/0 50%
 - 13/0 50%